IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK KGS DIAMOND GROUP S.A., Plaintiff, ٧. DK HOLDINGS, LTD., Defendant.

KGS Diamond Group S.A., by and through its attorneys, states the following as its complaint against DK HOLDINGS, LTD.

## The Parties

- 1. Plaintiff, KGS Diamond Group S.A., is a corporation created under the laws of XXXXXXXXX having its principal place of business at Pra-de Plan 15, CH-1618 Chatel-St. Denis, Switzerland.
- 2. Upon information and belief, Defendant DK Holdings, Ltd. is a corporation organized and existing under the laws of England and Wales and having a principal place of business at Station Approach, Staplehurst, Kent, TN12 0QN, England. 8169160

3. Defendant manufactures and/or exports into the United States and/or distributes and/or sells abrasive products useful for abrading, grinding, polishing and sanding surfaces, as are commonly employed by hand, or in hand or powered tools in order to grind, smoothen, polish or similarly finish the surfaces of materials such as plastic, metal, wood and so forth.

## Jurisdiction

- 4. This is an action for patent infringement. Jurisdiction is founded on the existence of a federal question arising under the Acts of Congress relating to Patents, 35 U.S.C. §§ 271; 281-285. This court has jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).
- 5. Jurisdiction is also based on diversity of citizenship, 28 U.S.C. §§ 1332 and 1338(a), as the defendant is a citizen of the United Kingdom and plaintiff is a citizen of the Netherlands.
- 6. This is also an action for federal unfair competition. The Court has jurisdiction of the federal unfair competition claims, arising under Section 43(a) of the Trademark Act of 1946, under 15 U.S.C. 1121 and 1125(a), and the Judicial Code, 28 U.S.C. 1331, 1332 and 1338 in that this case arises under the trademark laws of the United States, 15 U.S.C. 1051 et seq., as hereinafter more fully appears.

Venue is based on 28 U.S.C. §§ 1391(d), as the defendant is an alien and 7. may be sued in any district.

## COUNT ONE

## **Patent Infringement**

- 8. As a cause of action and ground for relief, Plaintiff alleges and incorporates by reference paragraphs 1 through 7 of this complaint as a part of this Count.
- 9. Plaintiff is the owner, as an assignee of Sandro G.G. Ferronato, of all rights under the United States Patent No. 6,214,068 entitled "FLEXIBLE ABRASIVE MEMBER HAVING INTERLOCKING DEPOSITS" (the "Patent"), including the right to bring action against infringers of the Patent.
- 10. On April 10, 2001, the Patent was duly and legally issued. A copy of the Patent is attached as Exhibit "A". Plaintiff is the owner by assignment from inventors Sandro Giovanni Giuseppe and Ennetbaden Ferronato of all rights under the Patent, including the right to bring action against Defendant as an infringer of the Patent.
- 11. Defendant has manufactured, used, sold, and/or offered for sale products in the United States that infringe the Patent. See Exhibit B, photographs of

Defendant's products which infringe the Patent ("Products"). See also Exhibit C, which comprises printouts from defendant's website.

- 12. Plaintiff has never authorized Defendant at any time to make, use or sell any products covered by the Patent.
- 13. Plaintiff has been damaged by Defendant's infringement of the Patent, including, without limitation, lost profits, and/or royalty income, and/or damages on account of convoyed sales, and the Defendant has been unjustly enriched by such infringement, on account of profits and/or convoyed sales. Plaintiff has also suffered irreparable harm by Defendant's infringement of the Patent and will continue to suffer irreparable harm in the future, unless Defendants are permanently enjoined from infringing the Patent.
- 14. Defendant has had actual knowledge of the Patent, and its infringement of the Patent has been, and continues to be, willful, wanton, malicious and deliberate. The circumstances of such infringement warrant finding the abovecomplained of infringement to be an exceptional one.

## **COUNT TWO**

## **Federal Unfair Competition**

15. As a cause of action and ground for relief, Plaintiff alleges and incorporates by reference paragraphs 1 through 14 of this complaint as a part of this Count.

16.

- 16. Upon information and belief, Defendant, in contravention of Plaintiff's rights, adopted and used a product configuration which it is promoting for its characteristic of linking abrasive deposits which prevent tears. Such promotion takes the form of Defendant's naming its product with the alleged trademark DIA-LINK. Defendant had as its objective to unfairly take advantage of plaintiff and profit from Plaintiff's inventions. Defendant, upon information and belief, has distributed and continues to distribute in interstate commerce to the public, abrading products and advertising under the DIA-LINK trademark for Defendant's own commercial advantage.
- 17. In addition, Defendant has defended its infringement to Plaintiff by stating in a letter dated June 5, 2006 that its "islands" of abrasive particles would not interlock if they could move." If such defense is found to be correct by this court, which is strenuously contested, Defendant's use of the DIA-LINK trademark

constitutes acts in commercial advertising or promotion, which misrepresent the nature, characteristics, qualities, or geographic origin of their goods, services, or commercial activities.

- 18. As a direct and proximate result of these acts of unfair competition enumerated above, Plaintiff has sustained and will continue to sustain irreparable damage and injury to its business, goodwill, reputation and profits. Plaintiff is entitled to judgment for Defendant's profits and any damages sustained by Plaintiff in consequence of the deliberate nature of the unfair competition by Defendant.
- 19. By reason of the acts of Defendant herein alleged, Plaintiff has been damaged and, unless restrained and enjoined preliminarily and permanently, Defendant has and will continue to deceive the public, impair the value of Plaintiff's properties and otherwise will cause Plaintiff immediate and irreparable harm.

## **Prayer for Relief**

WHEREFORE, Plaintiff prays for the following relief:

A judgment that the Patent is valid and that Defendant has infringed the
Patent;

- A preliminary injunction enjoining and restraining Defendant, its officers, b. directors, agents, servants, employees, attorneys and all others acting under or through them, directly or indirectly, from infringing competition rights of Plaintiff;
- c. A permanent injunction enjoining and restraining Defendant, its officers, directors, agents, servants, employees, attorneys, and all others acting under or through it, directly or indirectly from infringing patent rights of the plaintiff;
- d. A judgment and order requiring Defendant to pay damages under 35 U.S.C. § 284, with prejudgment interest;
- e. A judgment and order trebling the damages payable by Defendant, pursuant to 35 U.S.C. § 285.
- f. For a preliminary and final injunction restraining, its agents, servants, employees, successors, assigns and those in privity and/or concert with it from using the trademark DIA\_LINK or any other terms or phrases which falsely describe their product, or otherwise misrepresent the nature, characteristics qualities, or geographic origin of their goods, services, or commercial activities;
- For an order requiring Defendant to recall from its distributors, wholesalers, g. retailers and customers any product found to infringe the Patent.
- h. For an order requiring Defendant to be required to account to Plaintiff for any and all profits derived by Defendant from the sale of its goods and for all damages

sustained by Plaintiff by reason of said acts of infringement and unfair competition complained herein.

- i. For a judgment according to the circumstances of the case, for such sum above the amount found in actual damages, but not to exceed three times such amount as the Court may deem just.
- j. For an order requiring that all products, documents, materials, labels, signs, products, packages, wrappings, receptacles and advertisements in Defendant's possession or control which misrepresent the nature, characteristics or qualities of their goods, services, or commercial activities, and all plates, molds, matrices, and other means of making the same shall be delivered up and destroyed.
- k. A judgment and order directing Defendant to pay the costs of this action (including all disbursements) and attorneys' fees; and
- 1. Such other and further relief as this Court may deem just and equitable.

Bv

Anthony H. Handal (CT03837)

BROWN RUDNICK BERLACK ISRAELS

Seven Times Square

New York, New York 10036

Attorneys for Plaintiff

Dated:

October 2, 2007

## DEMAND FOR JURY TRIAL

Plaintiff hereby demands a trial by jury of all issues so triable.

BY:

Anthony H. Handal (CT03837)

BROWN RUDNICK BERLACK ISRAELS

Seven Times Square

New York, New York 10036

Attorneys for Plaintiff

DATED

8169160

# **Exhibit A**

## (12) United States Patent Ferronato

(10) Patent No.: (45) Date of Patent: US 6,214,068 B1 Apr. 10, 2001

(54)	FLEXIBLE ABRASIVE MEMBER HAVING
	INTERLOCKING DEPOSITS

(76) Inventor: Sandro Giovanni Giuseppe Ferronato,

Acusserer Berg 3, CH-5408 Ennetbaden

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

09/202,297 (21) Appl. No.:

(22) PCT Filed: Jun. 14, 1996

(86) PCT No.: PCT/NL96/00241 § 371 Date: Mar. 22, 1999

§ 102(e) Date: Mar. 22, 1999

(87) PCT Pub. No.: WO97/47434

PCT Pub. Date: Dec. 18, 1997

(51) Int. Cl.7 ...... B27D 11/00; B27D 11/02

(52) U.S. Cl. ...... 51/297; 51/293; 51/307; 51/309, 451/526

(58) Field of Search ..... ... 51/293, 297, 307, 51/309; 451/526, 527

(56)References Cited

U.S. PATENT DOCUMENTS

5,035,723 \* 7/1991 Kallinowski e al. ...... 51/309

5,389,119 2/1995	Ferronato et al
5,654,078 * 8/1997	Ferronato 51/293
5,681,217 * 10/1997	Hoopman et al 451/528

FOREIGN PATENT DOCUMENTS

64748 11/1982 (EP) . 3/1995 (EP) . 6/1995 (EP) . 642RR9 657250 3/1973 (FR) 2147606 WO 96/07508 3/1996 (WO)

#### OTHER PUBLICATIONS

International Search Report for PCT/NL96/00241 completed on Feb. 13, 1997.

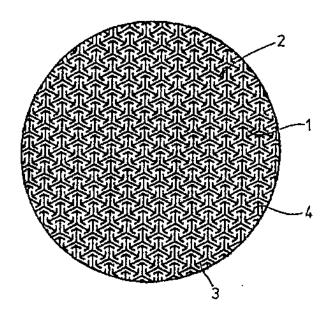
\* cited by examiner

Primary Examiner-Michael Marcheschi (74) Attorney, Agent, or Firm-Handal & Morofsky

ABSTRACT

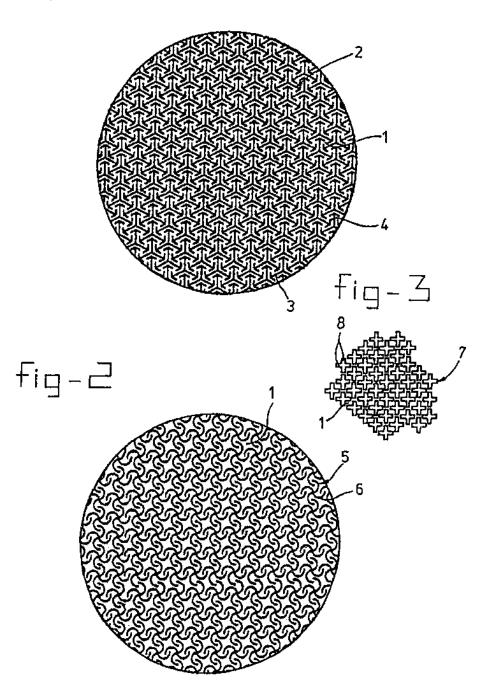
A flexible abrasive member comprises a porous layer which carries deposits with embedded abrasive particles, said deposits being separated from each other. The deposits are arranged and shaped in such a way that they are mutually interlocked. Thereby, the tearing strength of the member is increased. As an example, the deposits may have cooperating convex and concave shapes. Also, the deposits may have hook-shaped or arrow-shaped protrusions which are hooked into each other.

17 Claims, 1 Drawing Sheet



U.S. Patent

Apr. 10, 2001 US 6,214,068 B1



## US 6,214,068 B1

#### FLEXIBLE ABRASIVE MEMBER HAVING INTERLOCKING DEPOSITS

The invention is related to a flexible abrasive member comprising a porous layer which carries deposits with embedded abrasive particles, said deposits being separated

Such flexible members are widely used for grinding and polishing. They are available as two general types, i.e. one type for dry grinding and one type for wet grinding. Flexible members of these types are known from U.S. Pat. No. 5,389,119. They can be manufactured in various ways, for instance by means of electroplating, electroless plating, gas deposition, sintering or screening by using resin.

These known flexible abrasive members have the disadvantage that the strength against disintegration, such as 15 tearing, is too low. Generally, the porous layer consists of a mesh material which itself has a considerable tearing strength. However, after a regular pattern of closely spaced deposits has been applied onto said mesh, its tearing strength is much lower.

This loss in tearing strength can be attributed to the occurrence of nominal tear directions which are constituted by the tear lines or tear channels, lying between the rows of regularly spaced deposits. Once a small tear has been to these tear lines or tear channels.

The object of the invention is to provide a flexible abrasive member having separated deposits with embedded abrasive particles which still has an excellent tear strength. This object is achieved in that the deposits are arranged and shaped in such a way that they are mutually interlocked,

Any effort to tear the porous layer material will be counteracted by the interlocking shapes of the deposits, which themselves have an excellent resistance against the loads resulting from tear forces. On the other hand, the 35 flexible character of the abrasive member is maintained, thanks to the spacing between the deposits.

The inventive concept of the invention can be carried out in various ways, provided the interlocking cooperation between the deposits is maintained. According to one of the 40 possibilities, the deposits have cooperating convex and concave shapes. For instance, the deposits may have hookshaped protrusions which are hooked into each other. Such protrusions may be S-shaped, or comprise two S-shapes which cross each other.

According to a further alternative, the deposits are arrowshaped, for instance with the deposits each comprising three arrow-shapes pointing away from each other.

Also, the deposits may have blunt protrusions which fit between each other, such as deposits which are cross-shaped 50 having four blunt protrusions pointing away from each other, or deposits having three blunt protrusions pointing away from each other.

The size of the deposits may lie between 2.5 and 15 mm. An important advantage of the flexible abrasive member 55 according to the invention is obtained by the mutual support of the adjacent deposits, which effect occurs due to the interlocking cooperation of the deposits. This support leads to a stabilization of the deposits, whereby their resistance against e.g. tilting under the influence of abrasive shear 60 forces is greatly improved.

This favorable effect can in particular be used in grinding or polishing of e.g. granite. This material generally comprises relatively hard and soft areas. The deposits of these prior art flexible abrasive members have a tendency to dig 65 into the softer parts of the granite. This normally results in an uneven surface, entailing loss of lustre and gloss.

According to the invention, the stabilised deposits show this tendency far less or not at all, giving a much better polishing or grinding result and a finer and smoother surface effect. As an example, with the flexible member according to the invention a higher gloss reading of about 5-10 can be achieved. Thus, the final polishing step is made easier and faster.

This important advantage of the flexible abrasive member according to the invention is related to its ability to 10 maintain a plain grinding surface even while large grinding forces are exerted on the deposits. These grinding forces result in shear loadings on the deposit. As a result, the seperated deposits in traditional flexible abrasive members have the tendency to tilt under the influence of such grinding forces. The influence of this tendency to tilt manifests itself in particular in the softer parts of the above granite, which are less able to resist the tilting movement and are therefore ground away more deeply than the harder parts thereof. The product obtained has a less smooth surface, leading to a 20 lower gloss.

In contrast, the deposits of a flexible abrasive member according to the invention are far less prone to such tilting movements. Having regard to the fact that these deposits are interlocked, they are able to exert a mutual stabilizing force initiated, it propagates itself even under low tear forces due 25 on each other. Thus, all deposits are held in their correct position during grinding, which leads to a smoother and more accurate surface. The flexible abrasive member can therefore be used as a precision tool.

Also, the flexible abrasive member according to the invention is suitable for working small objects. Objects which are small in relation to the grinding surface of the flexible abrasive member, exert strong local forces on said member which could result in deformations of its surface due to tilting of the deposits. Here as well the interlocking relationship of the deposits in the flexible member according to the invention leads to better results. In particular, the flexible abrasive member carried out as a grinding or polishing belt benefits from the interlocking relationship of the deposits.

Furthermore, good results are also obtained in grinding or polishing the edge areas of platelike or blockshaped objects. These edge areas, which normally are formed by the intersection of two faces of such object which are at an angle of about 90 degrees, are exerting a concentrated load on the 45 surface of the flexible abrasive member. Here as well, the interlocking relationship of the deposits results in a smoother and more plain edge surface.

The invention will now be explained further with reference to two embodiments shown in the figures.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a first embodiment of a flexible abrasive disc according to the invention.

FIG. 2 shows a second embodiment.

FIG. 3 shows a third embodiment.

The flexible abrasive disc as shown in FIG. 1 comprises a base member consisting of a porous layer 1. By means of a known technique, such as electro-plating, electrodeless plating, etc., deposits 2 are applied to the porous layer 1, in such a way that they are embedded therein. In the embodiment of FIG. 1, each deposit generally consists of three arrows, which mutually enclose angles of 120°. Each arrow of deposit 2 consists of a leg 3 and an arrow head 4.

As is clear from FIG. 1, the arrow heads 4 grip behind the arrow heads of neighboring deposits 2, which means that they prevent too large relative movements of neighboring

### US 6,214,068 B1

deposits 2. For instance, in case the porous layer 1 would give way as a result of an initial tear, a further development of this tear is prevented due to the fact that the further relative movement of the deposits which are embedded in the porous layer 1, is prevented due to the fact that their 5 arrow heads come to lie against eachother.

It will be clear that numerous other embodiments are possible for the deposits to obtain the same effect. As an example, the embodiment of FIG. 2 is shown, comprising again a base member consisting of a porous layer 1, but now 10 having cross-shaped deposits 5. The cross-shaped deposits 5 are each composed of crossing "S"-shapes 6, the ends of which hook behind eachother.

In the partly shown embodiment of FIG. 3 a porous layer 1 comprises deposits 7 each having four blunt protrusions 8. 15 These blunt protrusions a fit between eachother and thereby offer an interlocking relationship.

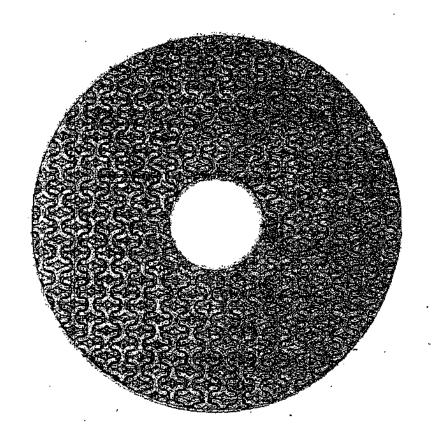
In the alternative of course also other deposits with more or less blunt protrusions could be provided.

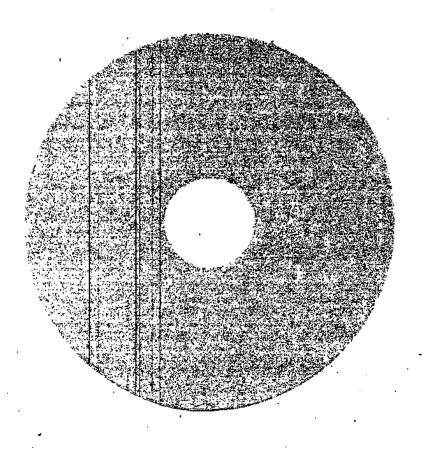
What is claimed is:

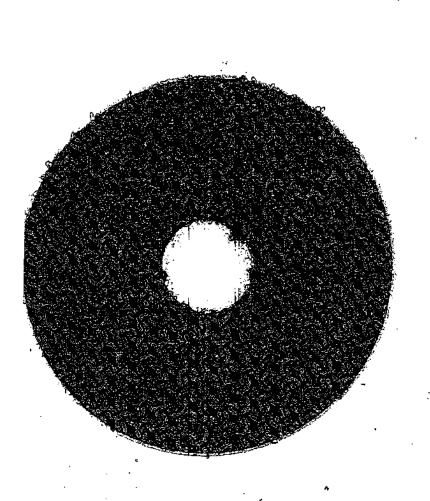
- 1. A flexible abrasive member comprising a porous layer having a plurality of concave shaped abrasive particles and a plurality of convex shaped abrasive particles embedded therein, said abrasive particles being separated from each other, wherein the abrasive particles are arranged and shaped so that they interlock when a force is applied, such as during a grinding or polishing operation using said member.
- A flexible abrasive member comprising a porous layer having a plurality of abrasive particles embedded therein, said abrasive particles being separated from each other, said abrasive particles having hooked shaped protrusions which are hooked into each other, wherein the abrasive particles are arranged and shaped so that they become interlocked when force is applied during a grinding or polishing operation 35 using said member.
- The member according to claim 2, wherein the abrasive particles are S shaped.
- 4. The member according claim 2, wherein each of the
- 5. The member according to claim 2, wherein the abrasive particles are arrow shaped.

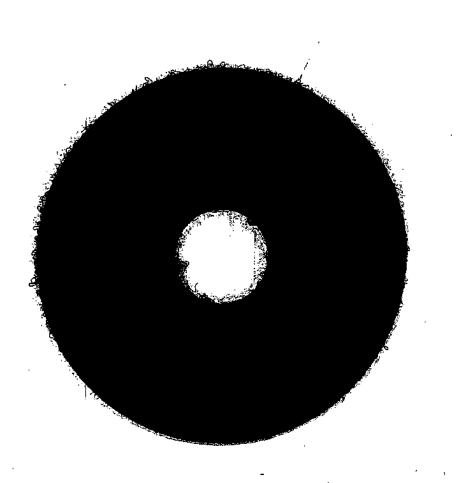
- 6. The member according to claim 3, wherein each of the abrasive particles comprises three arrow shapes pointing away from each other.
- 7. The member according to claim 1, wherein the abrasive particles have blunt protrusions which fit between each other.
- 8. The member according to claim 7, wherein each of the abrasive particles is cross-shaped and has four blunt protrusions pointing away from each other.
- 9. The member according to claim 7, wherein each of the abrasive particles have three blunt protrusions pointing away from each other.
- 10. The member according to claim 1, wherein the abrasive particles have a size of between 2.5 and 15 mm.
- 11. A hand pad for grinding or polishing comprising the flexible member according to claim 1.
- 12. A belt for grinding or polishing comprising the flexible member according to claim 1.
- A disc for grinding or polishing comprising the flexible member according to claim 1
- 14. A block for grinding or polishing comprising the flexible member according to claim 1.
  - 15. A flexible abrasive member comprising:
  - a) porous support layer; and
  - b) a regular pattern of similarly shaped abrasive particles embedded on the support layer, each of the abrasive particles having a shape comprising at least three extensions radiating in opposed directions from a center:
  - wherein the particles are spatially separated from one another and are interfitted together with the extensions of each particle disposed between the extensions of adjacent abrasive particles so as to resist development of a tear line when the abrasive member is subject to tearing forces.
- 16. A member according to claim 15 wherein the particle extensions each have a hook-shaped configuration whereby adjacent abrasive particles can interlock when the abrasive member is subject to tearing forces.
- 17. A member according to claim 16 intended for grinding abrasive particles comprises two S shapes which cross each 40 or polishing and having the form of a hand pad, a belt, a disc

# **Exhibit B**









# **Exhibit C**

SUPERARRASIVES

RESIN BONDED DIAMOND & C.R.N. MARKEL

PIAMOND & C.B.N. PRODUCTS

POLYCRYSTALLINE DIAMONO & C.B.M. PRODUCTS

W.HEEL Prefaration

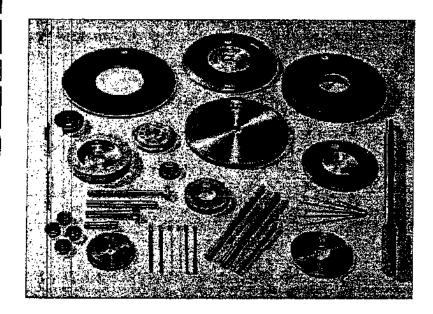
PRESSING TOOLS

ELECTROPLATED DIAMOND & C.B.H. Products

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## SUPERABRASIVE PRODUCTS FOR THE ENGINEERING NDUSTRY





Station Approach, Staplehurst, Kent TN12 0QN England. Telephone: +44 (0) 1580 891662 Fax: +44 (0) 1580 892724 Email: info@dk-holdings.co.uk



ENGINEERING RESIN BONDED DIAMOND & C.B.H. WHEELS

Case 1:07-cv-08547-NRB Resin\_Bonded\_Intro

## RESIN BONDED DIAMOND & C.B.N. WHEELS

## Introduction

A wide range of shapes and sizes is available for toolroom and production use. Many other shapes and sizes can be manufactured on request for special machines.

## D.K. Resin Bonded Diamond Wheels

The main use is for grinding Tungsten Carbide Tools and Ceramics. A range of bonds is available to suit different applications, including grinding glass, ferrites and other non-ferrous hard materials.

## D.K. Resin Bonded C.B.N. Wheels

D.K. C.B.N. wheels have been specially developed for the efficient grinding of hardened steels, super alloys, etc.



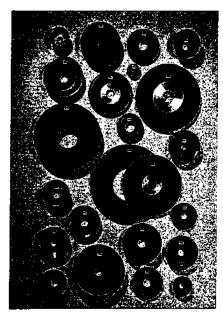
Wheel performance and the economy of the grinding operation is determined to a large extent by the correct choice and the careful manufacture of the bond, as well as by the quality and size of the diamond/C.B.N. grit.

The bond should give perfect diamond/C.B.N. grit retention to ensure maximum utilisation and suitable wear characteristics to expose fresh diamond/C.B.N. tips.

We have specialised bonds such as Phenolics. Polyimide, Metoid etc.

## Specifications

Please refer to our Technical Dept. to advise you on the best wheel specifications for your applications. The variations are: Grit type (Diamond or C.B.N.), Grit



## Ordering

When placing orders it would be helpful to give the following information:

- 1. Wheel shape and description. (See standard wheel shapes)
- 2. Wheel size.
- 3. Type of Superabrasive, Diamond c C.B.N.

size (see the tables), Concentration grit per unit volume, Body material and Bond type. The body of each wheel is usually available in choices of Aluminium, Resinal or Bakelite.



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Station Approach, Staplehurst, Kent TN12 0QN England. Telephone: +44 (0) 1580 891662 Fax: +44 (0) 1580 892724 Email: info@dk-holdings.co.uk

4. Grit size.

Filed 10/02/2007

- 5. Concentration.
- 6. Application.

SUPERABRASINES

RESIN BONDED DIAMOND & C.B.N. WHEELS

CERAMIC DIAMOND & C.B.N. PRODUCTS

POLYCRYSTALLINE DIAMOND & C.B.N. PRODUCTS

WHEEL PREPARATION

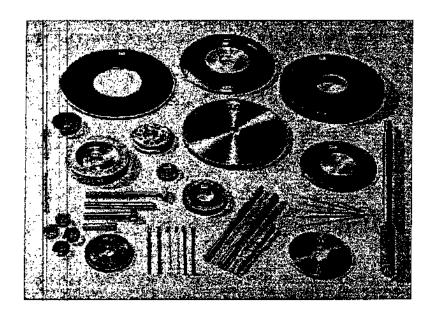
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## SUPERABRASIVE PRODUCTS FOR THE ENGINEERING NDUSTRY





Station Approach, Staplehurst, Kent TN12 0QN England. Telephone: +44 (0) 1580 891662 Fax: +44 (0) 1580 892724 Email: info@dk-holdings.co.uk AEP STORE SOLECTO LED



ENGINEERING RESIN BONDED DIAMOND & C.B.N. WHEELS



## RESIN BONDED DIAMOND & C.B.N. WHEELS

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A wide range of shapes and sizes is available for toolroom and production use. Many other shapes and sizes can be manufactured on request for special machines.

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### **Bonds**

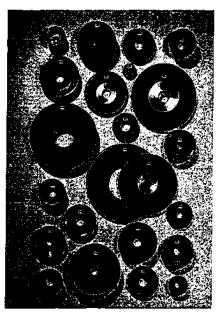
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size (see the tables), Concentration grit per unit volume, Body material and Bond type. The body of each wheel is usually available in choices of Aluminium, Resinal or Bakelite.



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- 4. Grit size.
- 5. Concentration.
- 6. Application.